

CALIFORNIA DEPARTMENT OF FISH AND GAME

ANNUAL REPORT

for research and monitoring activities authorized
under the 4(d) research limit for the period
January 1, 2006 to December 31, 2006

Notes:

- 1) *Report template needs to be filled out completely without any changes in format;*
 - 2) *This report is for species and projects covered under the Department's 4d research limit only.*
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1. Project Number and Title (see attached list for your project number):

2006 Feather River Hatchery Spring-run Chinook Fish Ladder Investigations

2. Name, address, phone, and e-mail addresses of Principal Investigator or primary contact

person(s): Jason Kindopp (jkindopp@water.ca.gov, (530-534-2381) and Ryon Kurth (rkurth@water.ca.gov, (530-534-2505)California Department of Water Resources, Division of Environmental Services, 460 Glen Drive, Oroville, CA 95966. Anna Kastner, (akastner@dfg.ca.gov), Feather River Fish Hatchery 5 Table Mountain Blvd, Oroville, CA 95965.

3. Evolutionarily Significant Unit(s) in which project activities occurred (see attached list):

Central Valley

4. Beginning and projected end date, or indicate whether study is ongoing: This is an ongoing study, which began in 2003 and currently has no end date.**5. Time of year and frequency of sampling (e.g., Jan – Jun; 3 days per week):** Marking at the Feather River Hatchery occurs at least twice per week and begins in spring as early as April 1st and ends as late as mid July (Typically mid-May-June). During marking at the FRH, any recaptured salmon are recorded and immediately returned to the river. Recapture of tagged Spring-run also occurs during the escapement survey. Every tagged Spring-run encountered is recorded. Heads of CWT salmon (adipose fin clipped) are recovered during normal operations of the CWT portion of the Escapement survey. The heads are then sent to the CDFG Ocean Salmon Harvest lab in Santa Rosa, CA.**6. River basin(s) sampled, and approximate latitude and longitude of sampling sites:**

Feather River Basin; Feather River Hatchery: 39.3.118N, 121.32.42W.

7. Brief description of the techniques and methods used: Spring run Chinook enter the Feather River Fish Hatchery through the fish ladder. Fish are brought into the hatchery building and lightly anesthetized following standard hatchery protocol. Each fish is marked with a sequentially numbered Hallprint dart tag on either side of the dorsal fin. Once marked, fish are released into the river via the river return channel. The river re-entry point is monitored twice daily to ensure all

released fish recover as expected. Some fish (approximately 100-150) are measured and have tissues collected for genetic analysis. In 2006, 130 individuals were sampled for genetic data.

8. Actual Take (#s):

Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” This also includes dead fish that are handled, sampled or retained ¹.

Do not include live fish counted in snorkel surveys or other strictly observational surveys (see #13 below).

Species and ESU	Adult Carcasses ¹	Adult				Juvenile			
		Non-lethal	Lethal		Percent Unintentional Mortality ⁴	Non-lethal	Lethal		Percent Unintentional Mortality ⁴
			Intentional ²	Unintentional ³			Intentional ²	Unintentional ³	
Coho salmon									
So. Oregon/No. Calif. Coasts									
Chinook salmon									
Central Valley spring-run		17438	0	120	.69%				
California Coastal									
Steelhead									
Northern California									
Central California Coast									
South-Central Calif. Coast									
Central Valley, California									
Green Sturgeon									
Southern DPS ⁵									

1. Example: carcasses handled/marked/sampled during carcass surveys

2. Example: killing steelhead to obtain otoliths or other tissue.

3. Fish that are killed unintentionally by monitoring or research activity. Example: fish inadvertently killed as a result of electrofishing.

4. Number of lethal unintentional take/ (nonlethal take + lethal unintentional take).

5. Estimate the number of Southern DPS green sturgeon that were encountered during salmonid research projects ONLY.

9. Summary of major findings (preliminary findings if project is still ongoing, or a final comprehensive report if project is completed):

Between May 15 and July 6, 2006, 17438 Spring-run Chinook salmon were marked at the Feather River Fish Hatchery. Of the salmon that were marked, 10179 were marked with individually numbered Hallprint dart tags for identification purposes. The other 7259 were given a caudal fin clip to aid in later identification. One hundred thirty individuals had tissue samples taken for genetic data. One hundred caudal fin clip tissue samples were collected by the CDFG tissue archive lab on June 15. Thirty liver samples were also collected between 5/18 and 6/15 and sent to Hatfield Marine Science Center (Kathleen O'Malley) for genetic sampling. There were a total of 120 mortalities during the marking period. During the marking period, 1898 Spring-run were recaptured in the FRH and re-released back to the Feather River. When spawning commenced in the fall, a total of 3921 fish were recaptured: 1768 at the FRH, 1904 in the river escapement survey and 249 by anglers or recreators. The FRH successfully spawned 1180 (67%) Spring-run that returned to the hatchery. Two hundred and nine (73%) of the 633 female salmon recovered in the river escapement survey were classified as spent and are thus assumed to have spawned successfully (78 were unspent, 346 had unknown spawning status so n= 287 for spawning status determination). All Spring-run were spawned (in the FRH) between 9/25 and 10/11 with the majority (67%) spawned by 9/28. The majority of fish recaptured in the river were found in the upper reaches of the low flow channel. Seventy percent were found within one mile of the hatchery and only one percent were found in the High Flow Channel. Based on the escapement survey recapture data the sex ratio of the marked spring-run was 1.7:1 females to males. The opposite trend was observed in the FRH, where the male: female ratio was 1.9:1. Of the 249 marked salmon caught by anglers 76% were reported as harvested. Reward tags placed on 199

individual salmon yielded 11 phone calls or an assumed harvest of 5.5% (of salmon tagged and released directly from the FRH only).

10. Post-handling mortality occurrences (if any) for salmon and steelhead, and brief description of methods used to measure post-handling mortality: Following each tagging session, we visually inspect the area around the river return channel for pos-mark mortality. A proportion of marked fish return to the hatchery before marking is completed. These fish are assessed for tagging effects (see above section #8.). Post handling mortality is less than 1%.

11. Measures taken to minimize disturbances to listed salmon and steelhead, and the effectiveness of these measures:

Fish are marked underwater, lightly anesthetized prior to any handling and returned to the river immediately after processing.

12. Problems and/or unforeseen effects (e.g., fish injuries or mortalities) on salmon and steelhead that occurred during the project:

None observed

13. Live fish counts from observational surveys:

Please report the number of **live** fish observed from snorkel surveys, spawning surveys, or other strictly observational surveys in this section, and indicate the survey methods.

Species and ESU	Adult	Juvenile	Methods
Coho salmon			
So. Oregon/No. Calif. Coasts			
Chinook salmon			
Central Valley spring-run	*750-1500		
California Coastal			
Steelhead			
Northern California			
Central California Coast			
South-Central Calif. Coast			
Central Valley, California			
Green Sturgeon			
Southern DPS ¹			

1. Estimate the number of Southern DPS green sturgeon that were observed during salmonid research projects ONLY.

*These Spring-run were observed in the FRH fish ladder on July 6 and were immediately returned to the river. They were not given Hallprint Dart tags or caudal fin clips.